



# AGENDA

## Vapor Intrusion Attenuation Workshop

### A Study of Observed Vapor Intrusion Attenuation

14<sup>th</sup> Annual West Coast Conference on Soils, Sediments and Water

March 15-18, 2004, Marriott Mission Valley, San Diego, California

The U.S. Environmental Protection Agency's (EPA's) Office of Solid Waste and Emergency Response (OSWER), welcomes you to our workshop on subsurface vapor-to-indoor-air attenuation factors. This attenuation factor plays a key role in regulatory guidance for the vapor intrusion (VI) exposure pathway. This quantity represents the ratio of indoor air concentrations to subsurface soil gas concentrations at some depth and is used to calculate VI action levels in draft EPA, state, and local regulatory guidance. EPA has sponsored this one and one-half day workshop to gather the latest data and interpret what is known from attenuation measurements and subsurface vapor attenuation processes.

### Platform Session - Monday, March 15

<u>Time</u>	<u>Title and Presenter</u>
8:00 AM	Welcome - Objectives & Overview <i>Henry Schuver, U.S. EPA, Office of Solid Waste</i>
8:15 AM	Vapor Intrusion Site Conceptual Model <i>Dr. Paul Johnson, Arizona State University</i>

### Background, Indoor Sources, and Measurement Methods

8:30 AM	Use of Radon and Perfluorocarbons Measurements to Allocate VOCs Measured in Indoor Air Among their Various Sources <i>Ronald B. Mosley, U.S. EPA, Office of Research and Development</i>
8:55 AM	A COC Ratio Approach for Defining Extent of Vapor Intrusion and Background <i>David J. Folkes, P.E., EnviroGroup Limited</i>
9:20 AM	Upward Vapor Intrusion Assessment: Real-time, Continuous Monitoring Data to the Rescue? <i>Dr. Blayne Hartman, H&amp;P Mobile Geochemistry</i>
9:45 AM	Development of a Sub-Slab Air Sampling Protocol to Support Assessment of Vapor Intrusion <i>Dr. Dominic DiGiulio, U.S. EPA, Office of Research and Development</i>
10:10 AM	Break

### Observed Attenuation Factors - Chlorinated Hydrocarbon Data

10:25 AM	Vapor Intrusion in Endicott, NY: Observed Differences in the Concentrations of Chlorinated Volatile Organic Vapors (CVOCs) in Basement and Subslab Samples <i>Dr. William E. Wertz, New York State Department of Environmental Conservation</i> <i>Gerald McDonald, New York State Department of Health</i>
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<b><u>Time</u></b>	<b><u>Title and Presenter</u></b>
10:50 AM	Attenuation Factors and Multiple Lines of Evidence for Evaluation of Potential Vapor Intrusion Pathways - Experience with the Grants Chlorinated Solvents Plume Site, Cibola County, New Mexico <i>John Lowe and Jeff Minchak, CH2M HILL</i>
11:15 AM	Evaluation of Observed Groundwater to Indoor Air Attenuation Factors at the Redfield Site, Colorado <i>David J. Folkes, P.E., EnviroGroup Limited</i>
11:40 AM	Measured Vapor Attenuation Coefficients From Soil Gas to Indoor Air, Runcorn, Cheshire, UK <i>Todd McAlary, PE, PG, GeoSyntec Consultants, Inc.</i>
12:00 PM	Lunch

### **Observed Attenuation Factors - Building Effects**

1:00 PM	Using the Trace Atmospheric Gas Analyzer (TAGA) in Conjunction with Summa Canisters to Calculate Attenuation Factors <i>David B. Mickunas, U.S. EPA, Office of Research and Development</i>
1:25 PM	Case Study of TCE Attenuation from Groundwater to Indoor Air and the Effects of Ventilation on Entry Routes <i>Alborz A. Wozniak, P.E., Weiss Associates</i>
1:50 PM	Case Study of Subsurface Vapor Intrusion at a Dry Cleaner Site <i>Amy Goldberg Day, MPH, and Eric Nichols, P.E., LFR Levine Fricke</i>
2:15 PM	Empirical Alpha Factors at "Wet Basement" Sites <i>Karen Berry-Spark, GeoSyntec Consultants, Inc.</i>
2:40 PM	Break

### **Observed Attenuation Factors - Petroleum Hydrocarbon Data**

2:55 PM	Attenuation of BTEX and MTBE in a Case Study of Residences <i>Julie A. Filosa Kabel, MPH, ENSR International</i>
3:20 PM	Investigation of Vapor Intrusion in Homes over Petroleum-Contaminated Groundwater in Stafford Township, NJ. <i>Dr. Paul F. Sanders, New Jersey Department of Environmental Protection</i>
3:45 PM	Attenuation of Hydrocarbon Vapors from LNAPL Under Residential and Commercial/Industrial Buildings <i>Stephen Washburn, ENVIRON International Corporation</i>
4:10 PM	Vapor Intrusion Attenuation Factors for Hydrocarbons Associated with a Diesel Spill <i>Lindsay Breyer, CIH, Walsh Environmental Scientists and Engineers, LLC</i>
4:35 PM	Questions, Conclusions

## **Vapor Intrusion Attenuation Workshop - Monday, March 15**

### **Poster Session: Overview Talks 7:00 - 8:00 PM; Viewing 8:00 - 9:00 PM**

#### **Background, Indoor Sources, and Measurement Methods**

Method and Location of Ground Water Sampling: Impact on Attenuation Factors for Assessing Impact on Vapor Intrusion - *Cynthia J. Paul, U.S. EPA, Office of Research and Development*

Sampling and Analysis Guidance for Indoor Air Vapor Intrusion Studies - *Mona Nassimi*

Methods for Characterization of Background Indoor Air and Subsurface Vapor Intrusion Effects - *Dr. Thomas E. McHugh, D.A.B.T, Groundwater Services, Inc.*

Seasonal Variation in Observed Indoor Air Concentrations of 1,1-DCE Due to Vapor Intrusion at the Redfield Site, Colorado - *David J. Folkes, EnviroGroup Limited*

Design and Testing of a Chamber Device to Measure Organic Vapor Fluxes From the Unsaturated Zone Under Natural Conditions - *MaryAnn Bogucki, University of Virginia*

Vapor Intrusion and Indoor Air Sampling Using a Passive Technique - *Dr. Jay W. Hodny, W. L. Gore & Associates, Inc.*

#### **Observed Attenuation Factors**

Paired Crawlspace/ and Indoor Air Vapor Sets and Lack of Correlation Between Indoor Air Concentrations and Several Variables - *Doug McReynolds, Tetra Tech, Inc.*

Comparison of Indoor Air Concentrations from Surface Flux Chamber to Modeled Concentrations from Subsurface Volatile Organic Compounds - *Robert Cheung, Geomatrix Consultants, Inc.*

Attenuation of Subsurface Vapors into Indoor Air via a Septic Sytem Acting as a Preferential Pathway - *Doug F. McReynolds, Tetra Tech, Inc.*

Empirical and Modeled Attenuation Factors and the Contribution of Preferential Pathways to Indoor Air Quality - *Harold Rush, Geomatrix Consultants, Inc.*

Evaluation of Groundwater as a Source of Observed VOCs in a Former Manufacturing Facility - *Dr. Thomas P. Army, PE, ENSOL, Inc.*

Evaluation of Attenuation Factor Using Field Data and Modeling (Analytical and Numerical) - *Dr. Perry Montazer, Multimedia Environmental Technology, Inc.*

Approach for Development of Site-Specific Vapor Intrusion Attenuation Factors  
*Carolyn Mayer, Philip Services Corporation; Chris Waldron, PIONEER Technologies Corporation*

Measured Versus Model Predicted Attenuation at ATK Dry Creek Road Site, Littleton, Colorado *Lindsay Breyer, CIH, Walsh Environmental Scientists and Engineers, LLC*

Residential Indoor Air Attenuation Factors Downgradient of MGP Site - *Betsy Ruffle, ENSR International*

The Fresh Water Lens and its Effects on Groundwater to Indoor Air Attenuation Coefficients - *Todd McAlary, PE, PG, GeoSyntec Consultants, Inc.*

## Vapor Intrusion Attenuation Workshop - Tuesday, March 16

### Evening Session - 7:00 - 9:00 PM

<u><i>Time</i></u>	<u><i>Title and Presenter</i></u>
7:00 PM	Regulatory Meaning and Goals <i>Henry Schuver, U.S. EPA, Office of Solid Waste</i>
7:05 PM	Review of Past VI Database / Data <i>Dr. Helen Dawson, U. S. EPA, Region 8</i> <i>Robert Truesdale, PG, RTI International</i>
7:25 PM	Review of Data from this Meeting <i>Ian Hers, Golder Associates</i> <i>Dr. Paul Johnson, Arizona State University</i> <i>Todd McAlary, PE, PG, GeoSyntec Consultants, Inc.</i>
7:40 PM	Comments on Empirical Data / Methods <i>Dr. Paul Johnson, Arizona State University</i>
7:55 PM	Comments on Empirical Data / Methods <i>Ian Hers, Golder Associates</i>
8:10 PM	Comments on Empirical Data / Methods <i>Todd McAlary, PE, PG, GeoSyntec Consultants, Inc.</i>
8:30 PM	Break
8:45 PM	Chlorinated Solvent Soil Vapour Intrusion into Indoor Air at a Commercial Warehouse <i>Adrian Heggie, GHD Pty Ltd.</i>
9:00 PM	Test Methodologies and Legal Liability for in Situ Testing:a Warning about Warning <i>Robert L. Collings, Esquire, Schnader Harrison Segal &amp; Lewis LLP</i>
9:15 PM	Community Concerns <i>Lenny Siegel, Center for Public Environmental Oversight</i>
9:30 PM	Regulatory Meaning and Goals <i>Henry Schuver, U.S. EPA, Office of Solid Waste</i>
9:35 PM	Panel Discussion
10:00 PM	Adjorn